



SUBSTITUTE SPECIFICATION

MONOCLONAL ANTIBODIES THAT BIND OCIF

CROSS-REFERENCE TO RELATED APPLICATIONS

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[0001] This is a divisional application of U.S.S.N. 08/915,004, filed on August 20, 1997, which was a continuation-in-part of PCT/JP96/00374, filed on February 20, 1996, and which designated the U.S. and claims priority to JP54977/1995, filed on February 20, 1995, and JP207508/1995, filed on July 21, 1995.

INCORPORATION OF SEQUENCE LISTING

[0002] Herein incorporated by reference is the Sequence Listing, which has been submitted on paper and on diskette as a file named "SubSeq16991005.txt" which is 136,636 bytes in size (measured in MS-DOS), and which was created on October 17, 2003.

FIELD OF THE INVENTION

[0003] This invention relates to a novel protein, osteoclastogenesis inhibitory factor (OCIF), and methods for producing the protein.

BACKGROUND OF THE INVENTION

[0004] Human bones are always remodelling by the repeated process of resorption and reconstitution. Osteoblasts and osteoclasts are considered to be the cells mainly responsible for bone formation and bone resorption, respectively. A typical example of a disease caused by abnormal bone metabolism is osteoporosis. Osteoporosis is known to result when bone resorption by osteoclasts exceeds bone formation by osteoblasts, but the mechanism of osteoporosis has not yet been completely elucidated. Osteoporosis causes bone pain and makes bones fragile, leading to fracture, particularly in elderly patients. Osteoporosis has therefore become a social issue with the increasing number of elderly people in the population. Therefore,